WHAT IS CLAIMED IS:

1. A method for scheduling, in real-time, an order in which data packets from a plurality of uplink channels stored in priority-class queues are organized in a downlink channel of a satellite communications network, the method comprising:

conveying data packets over a downlink channel in an order determined by a packet service schedule;

monitoring at least one traffic parameter associated with at least one data stream stored in a priority-class queue, the traffic parameter being representative of an actual bandwidth usage of the corresponding priority-class queue; and

while conveying data packets over the downlink channel, modifying the packet service schedule based on said at least one traffic parameter.

2. The method of claim 1, further comprising:

monitoring an actual bandwidth used by each priority-class queue.

3. The method of claim 1, further comprising:

temporarily storing data packets in corresponding priority-class queues based on service requirements associated with a priority-class.

4. The method of claim 1, further comprising:

measuring a phase of each data stream stored in a priority-class queue, said phase being indicative of an amount of time lapsed since a data packet from a particular priority-class queue was output to the downlink channel.

5. The method of claim 1, further comprising:

continuously obtaining new traffic parameters for each data stream by monitoring the arrival of data packets at the corresponding priority-class queue.

6. The method of claim 1, further comprising:

switching data packets from each uplink channel to a unique priority-class queue where said data packets are temporarily stored before being selected by the scheduler for output to the downlink.

7. The method of claim 1, further comprising:

storing the packet service schedule in a look-up table.

8. The method of claim 1, further comprising:

performing said conveying, monitoring and modifying steps on board a satellite.

9. The method of claim 1, further comprising:

calculating a new packet service schedule based on the traffic parameters according to a Packet Fair Queuing (PFQ) algorithm .

10. The method of claim 1, further comprising:

allocating in the packet service schedule a dynamic amount of bandwidth to each priority-class queue.

11. The method of claim 1, further comprising:

adjusting the bandwidth allocated to at least one priority-class queue, while the priority-class queue is storing data packets.

12. The method of claim 1, further comprising:

modifying the packet service schedule by adjusting an amount of bandwidth allocated to at least one priority-class queue while the priority-class queue is storing data packets.

13. A communications satellite, comprising:

at least one uplink and downlink for conveying data packets over communications channels;

queues for collecting data packets from uplinks and outputting the data packets to a downlink using a dynamic amount of bandwidth; and

a scheduler for allocating bandwidth to at least one queue, said scheduler changing an amount of bandwidth

allocated to at least one queue while said queue is buffering data packets between an uplink and downlink.

14. The communications satellite of claim 13, further comprising:

a bandwidth measurement module for measuring a statistical bandwidth actually being used by at least one queue, said scheduler updating the bandwidth allocation of said at least one queue based on said measured statistical bandwidth.

15. The communications satellite of claim 13, further comprising:

a look-up table storing a master frame allocating bandwidth to at least one queue, said master frame comprising a plurality of time slots, each time slot including a priority queue index identifying a queue to output a data packet during the associated time slot.

16. The communications satellite of claim 13, further comprising:

means for measuring data packet rate for each queue, said scheduler modifying bandwidth allocation based on the measured data packet rate.

17. The communications satellite of claim 13, wherein said scheduler further comprises:

a processor calculating statistical bandwidth allocation to said queues based on actual traffic arriving at said queues.

18. The communications satellite of claim 13, wherein said scheduler further comprises:

memory storing a packet service schedule identifying an order in which data packets pass over the downlink, said packet service schedule being based on bandwidth allocation calculated by said scheduler.

19. The communications satellite of claim 13, further comprising:

means for monitoring at least one traffic parameter associated with each downlink stream, said traffic parameter being representative of an actual usage of a priority-class associated with a queue, the scheduler changing bandwidth allocation based on said traffic parameter.

20. The communications satellite of claim 13, further comprising:

a switch for switching data packets from each uplink channel to a unique queue based on priority-classes of the data packets.

21. The communications satellite of claim 13, further comprising:

a processor calculating a new bandwidth allocation based on a Packet Fair Queuing algorithm.

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